The Co-occurring Matrix for Mental and Addictions Disorders

- Richard Ries MD
  - Professor of Psychiatry and Director, Division of Addictions, University of Washington Dept of Psychiatry and Behavioral Sciences;
  - Director of Out-patient Psychiatry, Addictions and Dual Disorders Programs, Harborview Medical Center, Seattle, Wa
  - Medical Director, Washington State Division of Alcohol and Substance Abuse
  - Chair, Steering Committee and Fellows Advisory group, COCE (the Co-occurring Center of Excellence…CSAT
  - rries@u.washington.edu

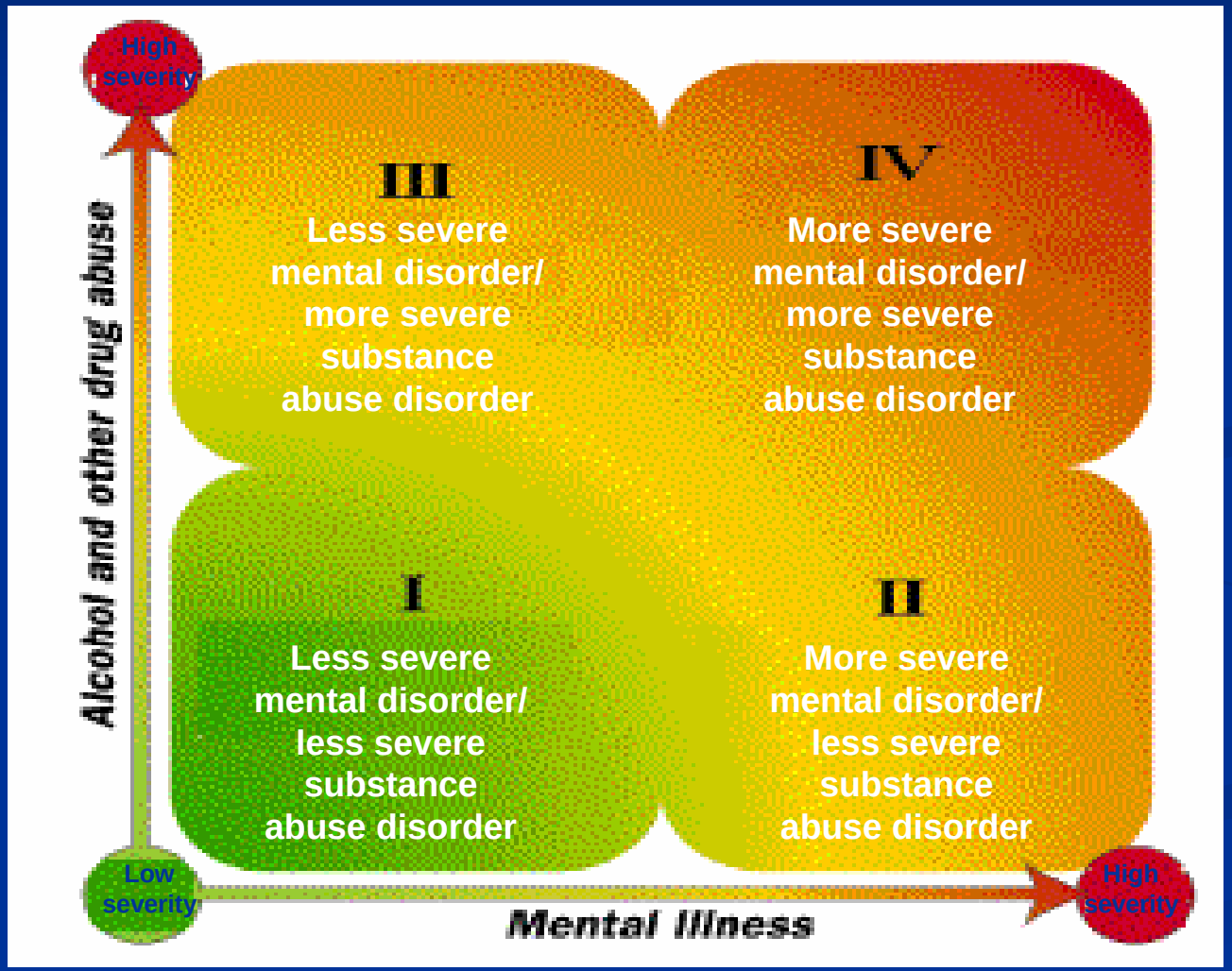
Why was the Co-occurring Matrix developed?

- Most early “dual disorder” research dealt only with those with Severe and Persistent Mental Illnesses in MHC’s
- A method and graphic was needed to describe other populations in MH and Addictions settings
- The “Matrix” is simple and relates two Illnesses/Systems…
  - Mental Health vs Addictions
  - At two severities ….Low vs High
- Creates Chi Square combinations LL, LH, HL, and HH
  - But do the “severities” mean Illness Severity, or Service Need?

Adopted by various states and national organizations

- First published as a model by Ries ’93
- May have spread or been independently developed in Connecticut, New York, others
- Adopted as state model by New York ’95
- Adopted by State Directors: NASADAD/NASMHPD, June ’98 as national model for co-occurring disorders treatment

The Four Quadrant Framework for Co-Occurring Disorders



A four-quadrant conceptual framework to guide systems integration and resource allocation in treating individuals with co-occurring disorders (NASMHPD,NASADAD, 1998; NY State; Ries, 1993; SAMHSA Report to Congress, 2002)

Not intended to be used to classify individuals (SAMHSA, 2002), but . . .

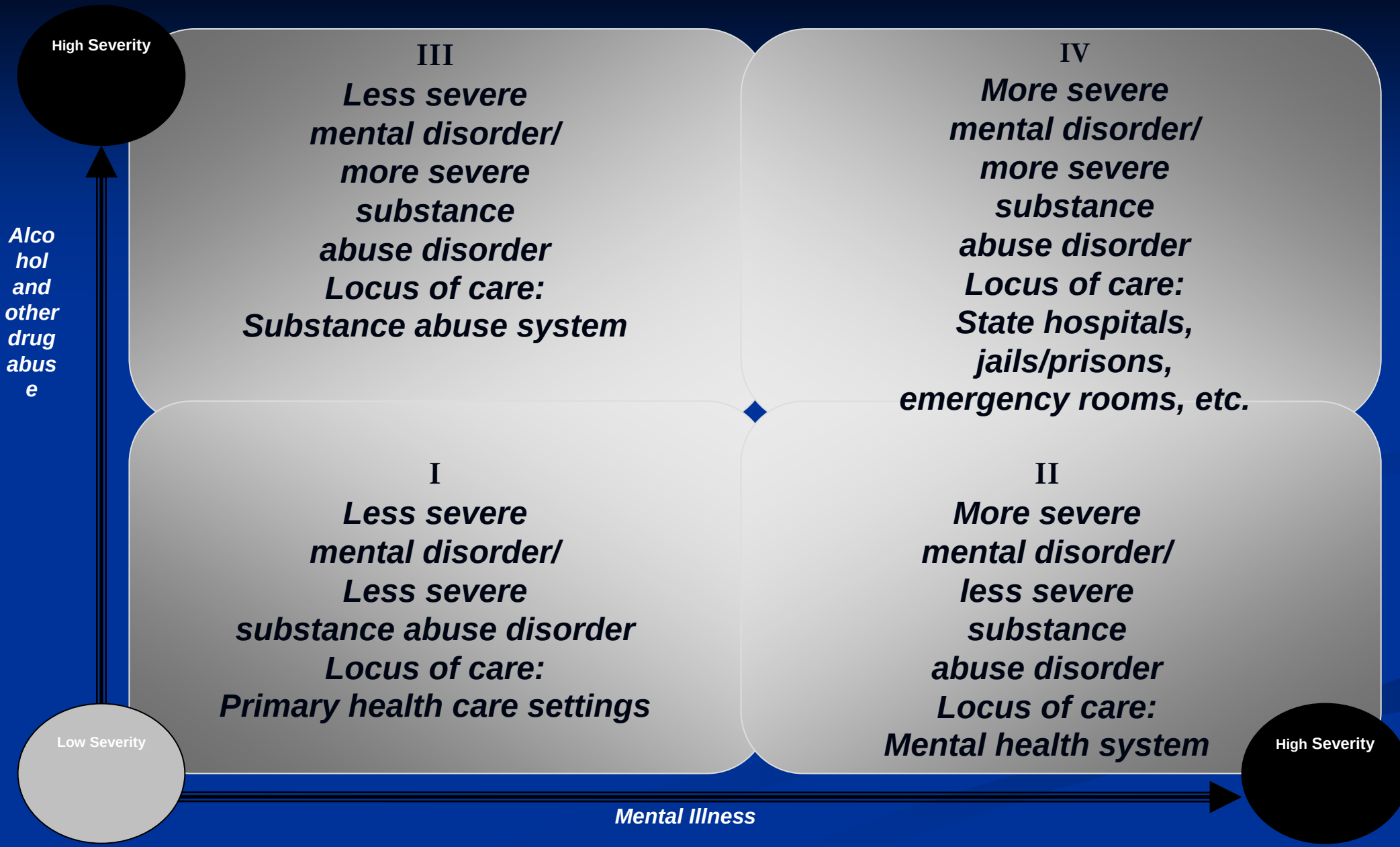

High Severity
III
Less severe mental disorder/ more severe substance abuse disorder
Locus of care:
Substance abuse system
IV
More severe mental disorder/ more severe substance abuse disorder
Locus of care:
State hospitals, jails/prisons, emergency rooms, etc.
Alcohol and other drug abuse
I
Less severe mental disorder/ Less severe substance abuse disorder
Locus of care:
Primary health care settings
II
More severe mental disorder/ less severe substance abuse disorder
Locus of care:
Mental health system
Low Severity
High Severity
Mental Illness

TABLE OF CO-OCCURING PSYCHIATRIC AND SUBSTANCE ABUSE RELATED DISORDERS IN ADULTS

Washington State

LOW - HIGH

Collaboration between systems

Eligible for public alcohol/drug services but not mental health services

Low to Moderate Psychiatric Symptoms/Disorders

And

High Severity Substance Issues/Disorders

Services provided in outpatient and inpatient chemical dependency system

HIGH - HIGH

Integration of services

Eligible for public alcohol/drug and mental health services

High Severity Psychiatric Symptoms/Disorders

And

High Severity Substance Issues/Disorders

Services provided in specialized treatment programs with cross-trained staff or multidisciplinary teams

LOW - LOW

Consultation between systems

Generally not eligible for public alcohol/drug or mental health services

Low to Moderate Psychiatric Symptoms/Disorders

And

Low to Moderate Severity Substance Issues/Disorders

Services provided in outpatient chemical dependency or mental health system

HIGH - LOW

Collaboration between systems

Eligible for public mental health services but not alcohol/drug services

High Severity Psychiatric Symptoms/Disorders

And

Low to Moderate Severity Substance Issues/Disorders

Services provided in outpatient and inpatient mental health system

ASAM PPC 2 R
Patient Placement Model

- Addiction
  - Addiction Only
  - Addiction based dual capable
  - Addiction based dual enhanced

- Mental Health
  - MH only
  - MH based dual capable
  - MH based dual enhanced

    - There are 6 ASAM dimensions

Other "Systems" Axes

- Medical
- HIV
- Criminal Justice
- Homeless
- Developmental/Retardation
- Illegal Alien

Other Dual Disorder Patient subtypes

- Wallen M ’89 …….SMI, PD, Sub Ind, Others
- Ries ’93 …….Beginning Low High matrix
- Lehman A et al ’94 …….SMI, Non SMI, Sub Ind, PD
- Dixon L et al ‘97 …….Prim/Secondary Psych
- Zimberg 99 …….Sub Ind, Longer term etc

Though designed as a "Services" schematic:

- Practitioners want clinical LH definitions for dispositional purposes.
- Agencies want clinical LH definitions so they can characterize their mix of pts, design programs to match
- States want LH definitions so they could compare different mixes of pts in agencies, regions, counties etc
- Feds want to compare states

	High Severity Psychiatric Symptoms/Disorders
Low to Moderate Severity Substance Issues/ Disorders	■Severe and persistent mental illness (Schizophrenia, Bipolar, Major Depression w/psychosis, serious PTSD, Severe Personality Disorders) ■Demonstrated patterns of substance use, misuse or abuse ■Frequently served in outpatient mental health agencies, mental health crisis response services, and/or inpatient psychiatric settings.

Wa state schema

Studies of site (systems) specific co-occurring subtypes

- Hein ’97 MH… more Schiz Addict… No Schiz
  outpt
- Primm MH… More Schiz Addict… No Schiz
  outpt
  No Anx More Anx/Dep
- Havassy MH…Schiz 43% Addict… Schiz 31%
  Acute remarkably few diffs

These type of studies document the type of and the “integration” practices of the communities which they study

However NO Co-occurring Matrix published data exists

- About its use as a “Systems” tool or concept
- About its use as a “Clinical” tool
- L/H definitions are conceptual and have not been operationalized for either Systems or Patient cases… ie hard to research

But there are some pilot studies:

- Gabriel R et al ’04
- Ries R et al ‘04

Project SPIRIT: Seeking Pathways Into Receiving Integrated Treatment

Client Outcomes From a Local CSAT-Funded Study of Co-Occurring Disorders Treatment

RMC Research Corporation
Portland, Oregon

Principal Investigator: Roy M. Gabriel, Ph.D.

Project Director: Kelly Brown Vander Ley, Ph.D.

Outcome Analyst: Jennifer Lembach

Data Collection Coordinator: Gillian Leichtling

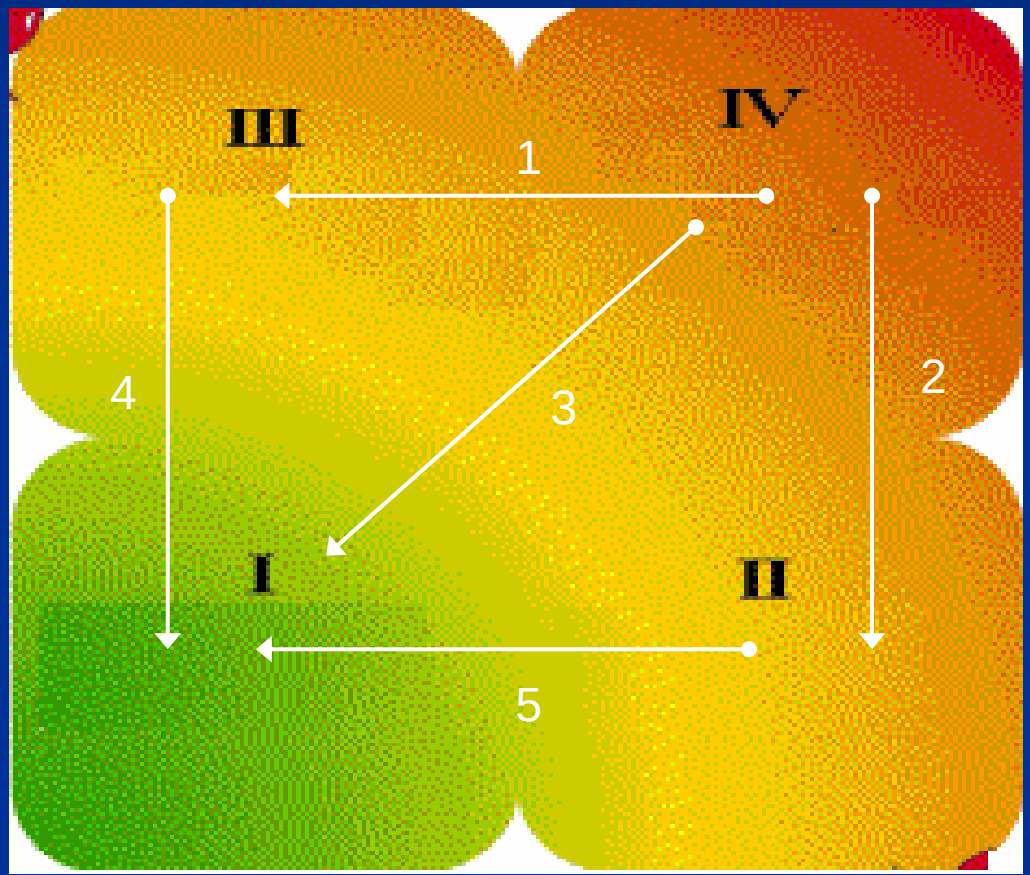
A Presentation at the Northwest Regional Substance Abuse Director's Institute in "Lessons on Integrating Substance Abuse and Mental Health." Kah-Nee-Ta, Oregon, April 26-28, 2004

Mental Health/Substance Abuse Severity Quadrants

		Mental Health Severity	
		Low	**High**
Substance Abuse Severity	**High**	QIII *n* = 40	QIV *n* = 80
	Low	QI *n* = 84	QII *n* = 39

- Study participants classified into 4 mutually exclusive groups, defined by high or low severity on mental health and substance abuse disorders
- Because mental health and substance abuse are highly correlated, the low-low and high-high categories are the largest
- Gabriel R unpub ‘04

Looking for Change Over Time in SA and/or MH Severity: Movement from One Quadrant to Another (Gabriel R unpub 04)



1. Reduction in MH severity, but not SA severity.
2. Reduction in SA severity, but not MH severity.
3. Reduction in both MH & SA severity.
4. Reduction in SA severity, maintaining low MH severity.
5. Reduction in MH severity, maintaining low SA severity.

Findings (Gabriel R unpub 04)

Changes Six-months post-Treatment Entry[1]

- In all, much positive movement
  - Of 159 clients (65% of sample) who were in the high severity condition in one or both domains:
    - 77% reduced to low severity in one or both
    - 57% moved to the “Low/Low” classification
- What about the “SA masking MH problems” hypothesis?
  - Not supported in these data
    - Of 40 clients classified as Low MH, High SA severity, only 1 of 23 showed an increase in MH severity coupled with a decrease in SA severity

[1] Vander Ley, Lembach, Gabriel & Lewis; APHA, 2003

Relative vs Benchmarked Definitions of Low and High Severity

- Low MH in an acute psych ER might be HIGH MH in an addictions outpt clinic
- Low Addiction in a Methadone program might be High addiction in a primary care clinic
- Need for well described benchmarks

But what really classifies a "case" as Low or High

- Mental Illness
  - Diagnosis?
  - Persistency?
  - Disability?
- Alcohol/Drug
  - Use and Abuse
  - Dependence
  - Chronicity/Disability

Harborview Health Services Research Group

- Peter Roy-Byrne MD chief……Prim care x psych
- Richard Ries MD……Addiction, Co-occurring,Suicide
- Doug Zatzick MD……Trauma, PTSD Rx + Prev
- Mark Snowden MD……Geropsych
- Kate Comtois PhD……..Suicide, Borderline PD, High Utilizers
- Chris Dunn PhD……..Motiv interventions AlcTrauma
- Joan Russo PhD……..Data management, stats, DM
- Harborview Injury Prev Center

- NEW Center for Vulnerable MH, Addictions, Medical Populations

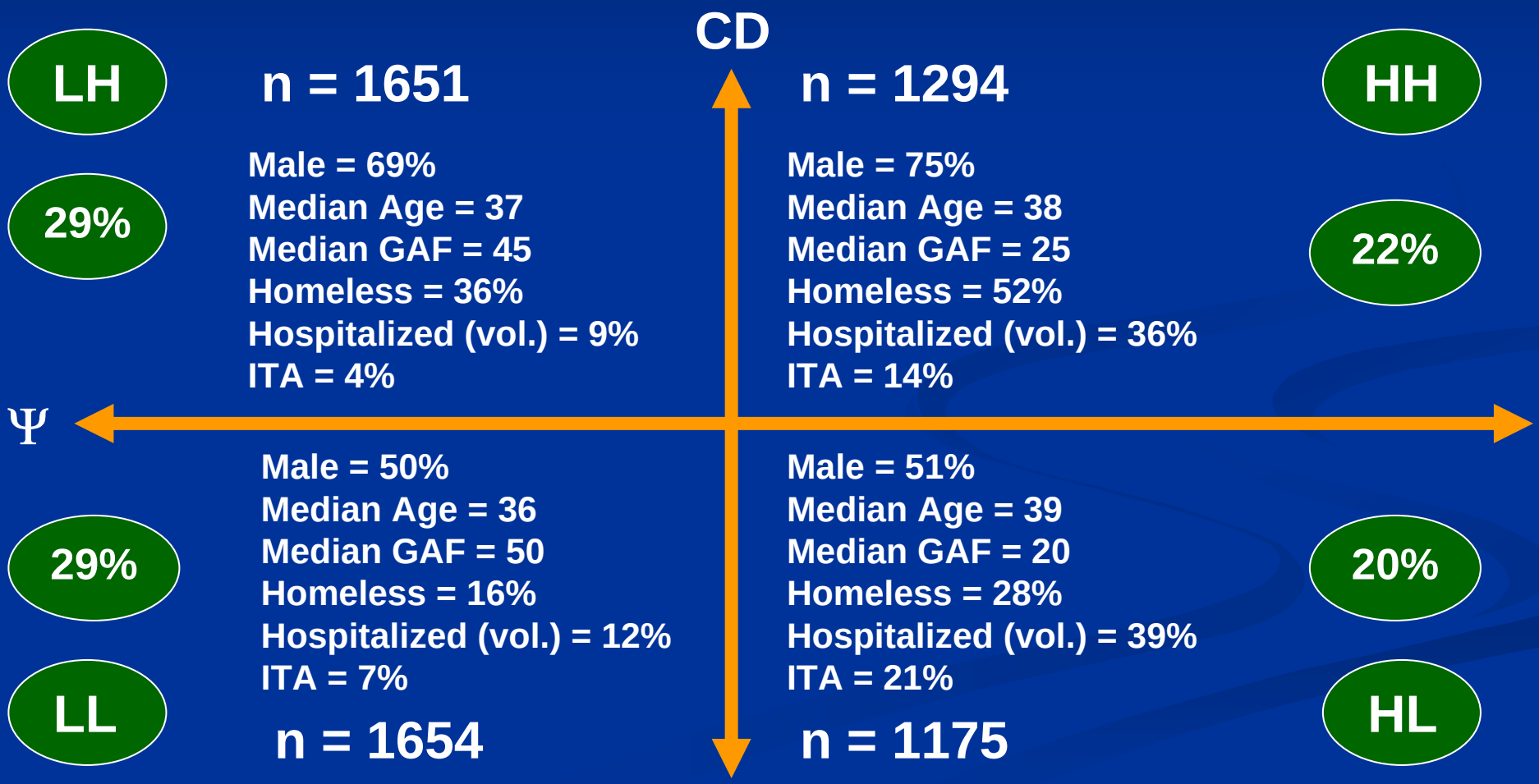
Methods: Attendings rate illness severities across 30 items on all admits and discharges

- Substance rating=
  - 0= no substance use problems
  - 1,2= substance use has led to only minor/infreq problems such as moodiness etc
  - 3,4= qualifies for Substance Abuse with problems, but not dependence
  - 5,6 = qualifies for dependence with compulsive use, consequences, and loss of control

Total n = 5774

Definition: CD = 0-2 Low, 3-6 High

Psychiatric = average of $\frac{\text{psychosis + depression + role dysfunction}}{3}$ then split at > 3, ≤ 3 (range 0-6)



Acute vs Longer term problems:

- Many Substance Induced Psychoses or Suicide attempts will ACUTELY require the highest level of care (Quad 4)
  - Often resolve in hours to days, now the case is Quad 3

- Stress or Medication non-compliance may acutely cause
  - a Low stable condition to become a High Unstable mental condition
  - (eg. stable depression to psychotic depression), Quad 1 to 2 or 4

- How to classify a severe alcoholic with 1day, vs 1 week, vs 1 mo, vs 1 yr vs 1 decade sobriety

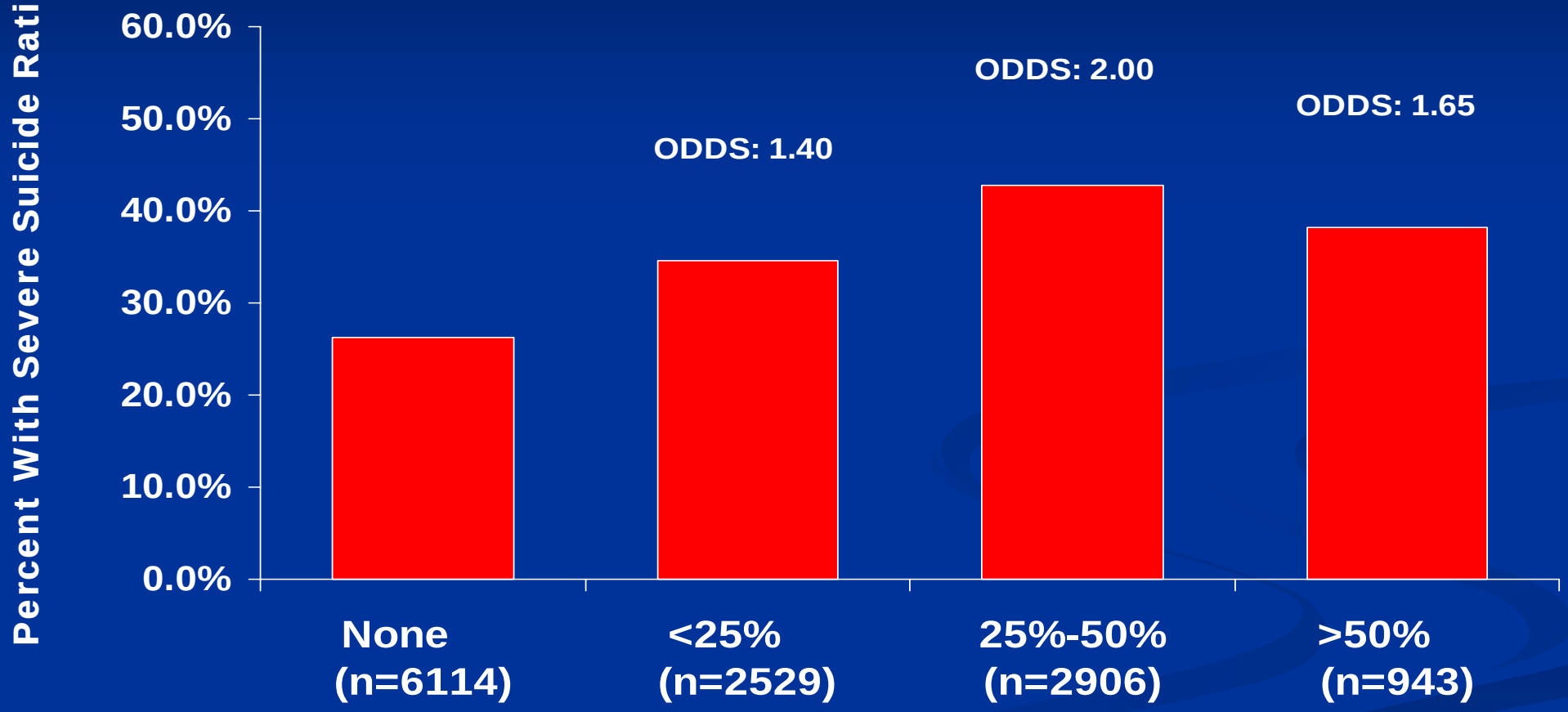
Therefore the need to consider Acute vs Longer term definition

Few Studies of "Substance Induced" psychiatric disorders

- Dixon L et al '97 …….one year follow up of Sub Induced showed more acute care, sub abuse, distinct from Prim psych.

- Ries R et al '01 …….Psych Attendings can tell the difference, most of the time, show construct validity in recognizing sub induced states

RELATIONSHIP OF SIMD TO SUICIDE SEVERITY (n=12,492)



ODDS adjusted for age & gender

Walds = 216.63 p < .001

Ries & Russo, 2003

Some Facts about Suicide:

- **30,000 die by suicide in USA each year**
- **More die by suicide than homicide (1.7 times more)**
- **Third leading cause of death in those 15-24 ….more than cancer, AIDS, heart, and lung disease combined**
- **Males die 4x more often, but females make more attempts**
- **60% die by firearm**

CDC web site

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- **Rates increase with age (as do other causes of death)**
- **Often Drug/Alcohol related**

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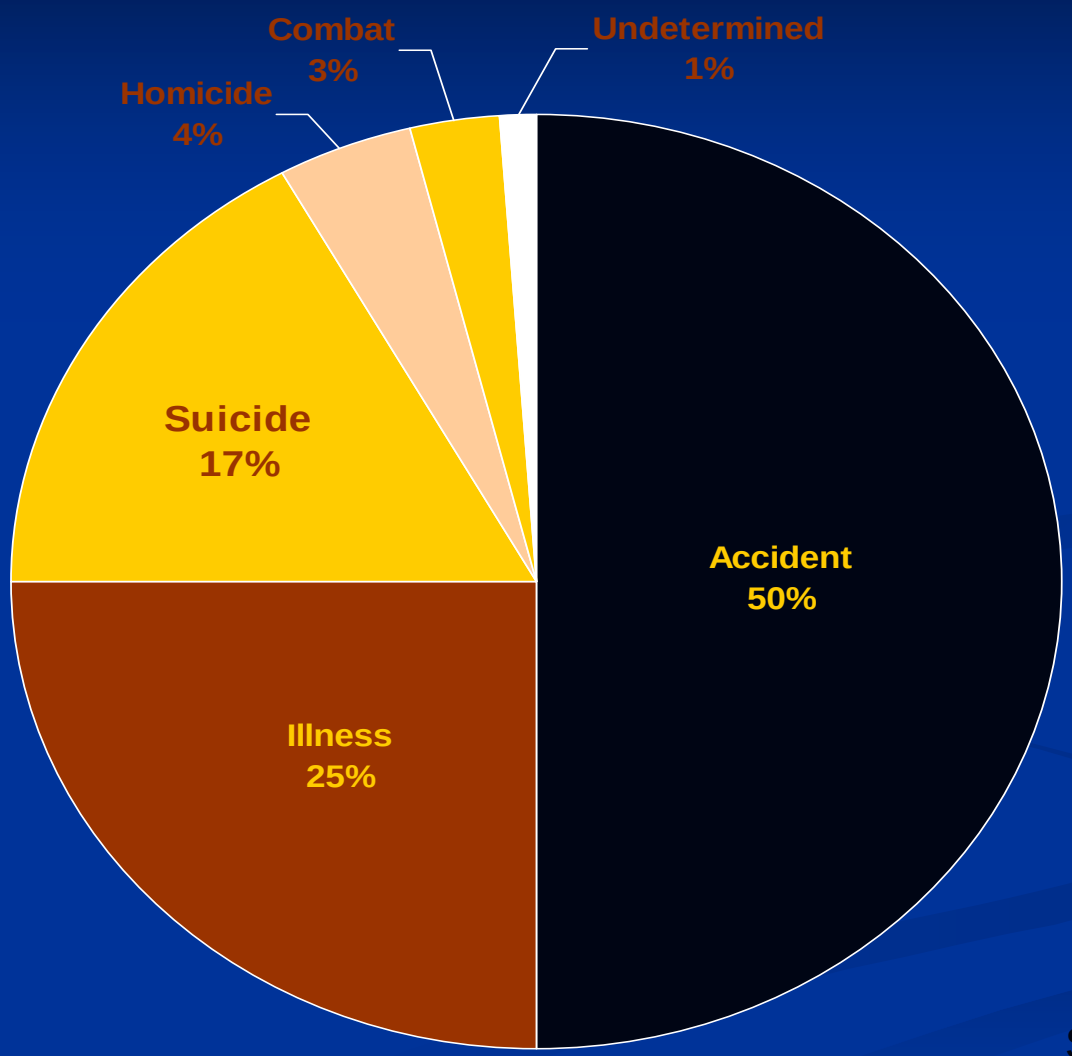
HOW U.S. SOLDIERS DIE



Suicide accounted for an average of nearly 1 in 5 deaths among regular and reserve U.S. military personnel between

Source: U.S. Armed Forces Medical Examiner, 2004

Is Suicide Primarily: "Mental Health Territory"

- Lifetime Suicide risk for Schizophrenic, Affective and Addiction Disorders:
  - Method: review of 83 mortality studies:
  - **Schizophrenia……4%**
  - **Affective Disorders……6%**
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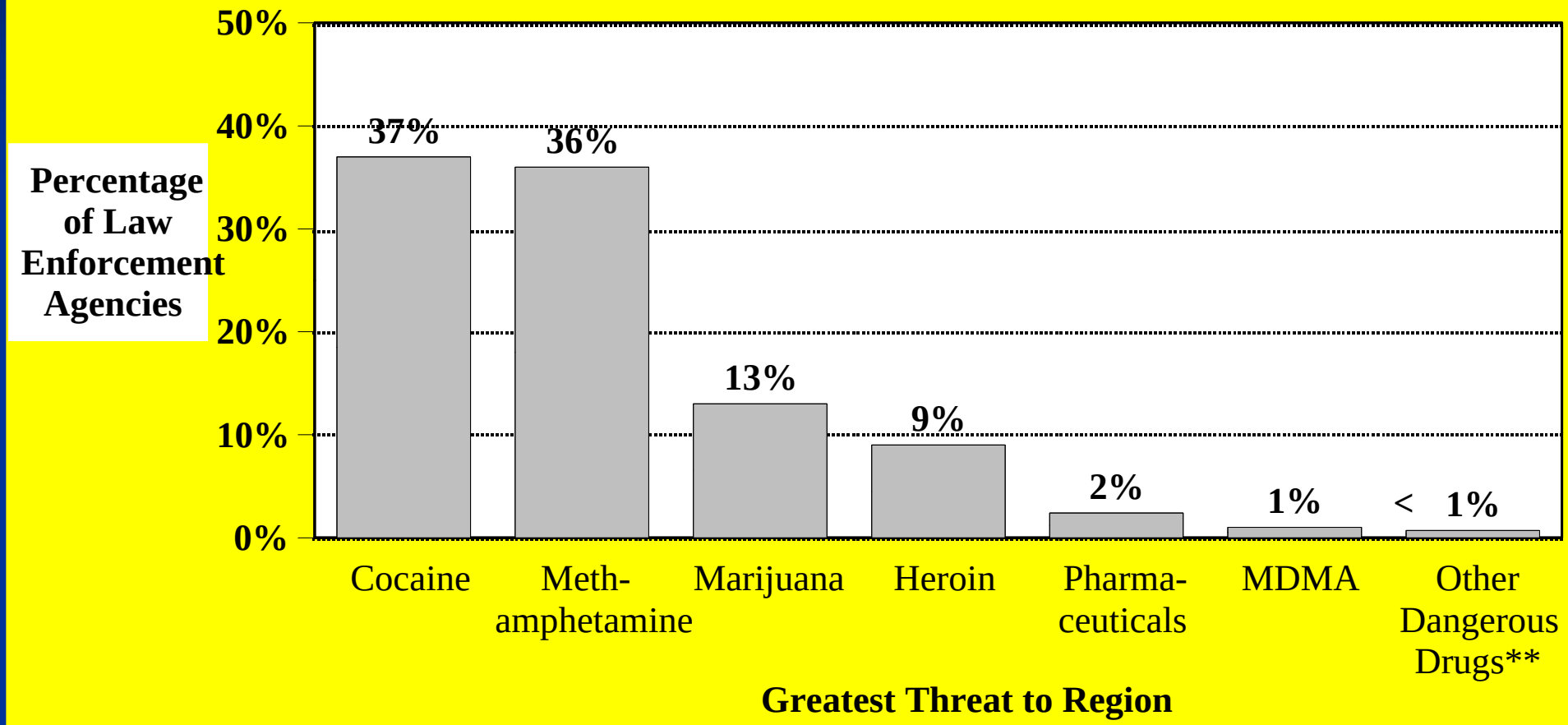
Inskip HM: Br J Psych 1998

Substance Induced Schizophrenia

- Meth/Amphet/cocaine
- Ecstacy
- Hallucinogens (strong THC too)

- About 50 % of MHC persons with Schizophrenia will have lifetime substance problems…at any given time, about 30-40 % are using

Cocaine and Methamphetamine Greatest U.S. Drug Threats, According to State and Local Law Enforcement Agencies



*Percentages do not add up to 100 due to the omission of the "no response" category.

NOTE: The 2003 National Drug Threat Survey was administered to a probability-based sample of state and local law enforcement agencies and was designed to provide representative data at national, regional, and state levels.

**Other Dangerous Drugs include the club drugs GHB, Ketamine, and Rohypnol® as well as the hallucinogens LSD, PCP, and psilocybin.

•• 301-405-9770 (voice) •• 301-403-8342 (fax) •• CESAR@cesar.umd.edu •• www.cesar.umd.edu ••

CESAR FAX is supported by BYRN 2004-1206, awarded by the U.S. Department of Justice through the Governor's Office of Crime Control and Prevention.

Meth vs Schiz

- Meth
  - Later onset
  - Clear regular heavy drug use
  - Lifestyle
  - More likely to preserve general function
  - Usually paranoid and voices, but not many negative sx
- Schiz
  - Earlier onset
    - Prodrome of withdrawal, negative symptoms, few friends
  - More global impairment, thought disorder
  - May have drug use but usually much less

METH ADDICTS: LIFETIME SUICIDE ATTEMPTS, BEHAVIOR PROBLEMS, AND FELONY CHARGES, BY GENDER

ASI Item	Overall	Males	Females	Test Statistic*
Attempted Suicide (%)	27%	13%	28%	35.42**
Violent behavior problems (%)	43%	40%	46%	3.29***
Assault Charges (mean number)	0.29	0.46	0.15	4.46**
Weapons charges (mean number)	0.13	0.21	0.07	4.09**

*Mantel-Haenszel chi-square was used to test differences in proportions by gender, df=1; Student's two-group t-test (two-sided) was used to test differences between males and females in continuous dependent variables reflecting the number of charges, df=1013.

$p < 0.00001$ *$0.1 \leq p < 0.05$

Zweben, et al., 2004

Substance Induced Mania

- Meth/Amphet/cocaine
- Ecstacy
- Halucinogens
- Alc/Benzo withdrawal
- Substance/medication induced in true Bipolar

- About 50% of bipolars have an episodic alc/drg problem..women bipolars have 5x more addiction than non bipolar women

Total n = 5774

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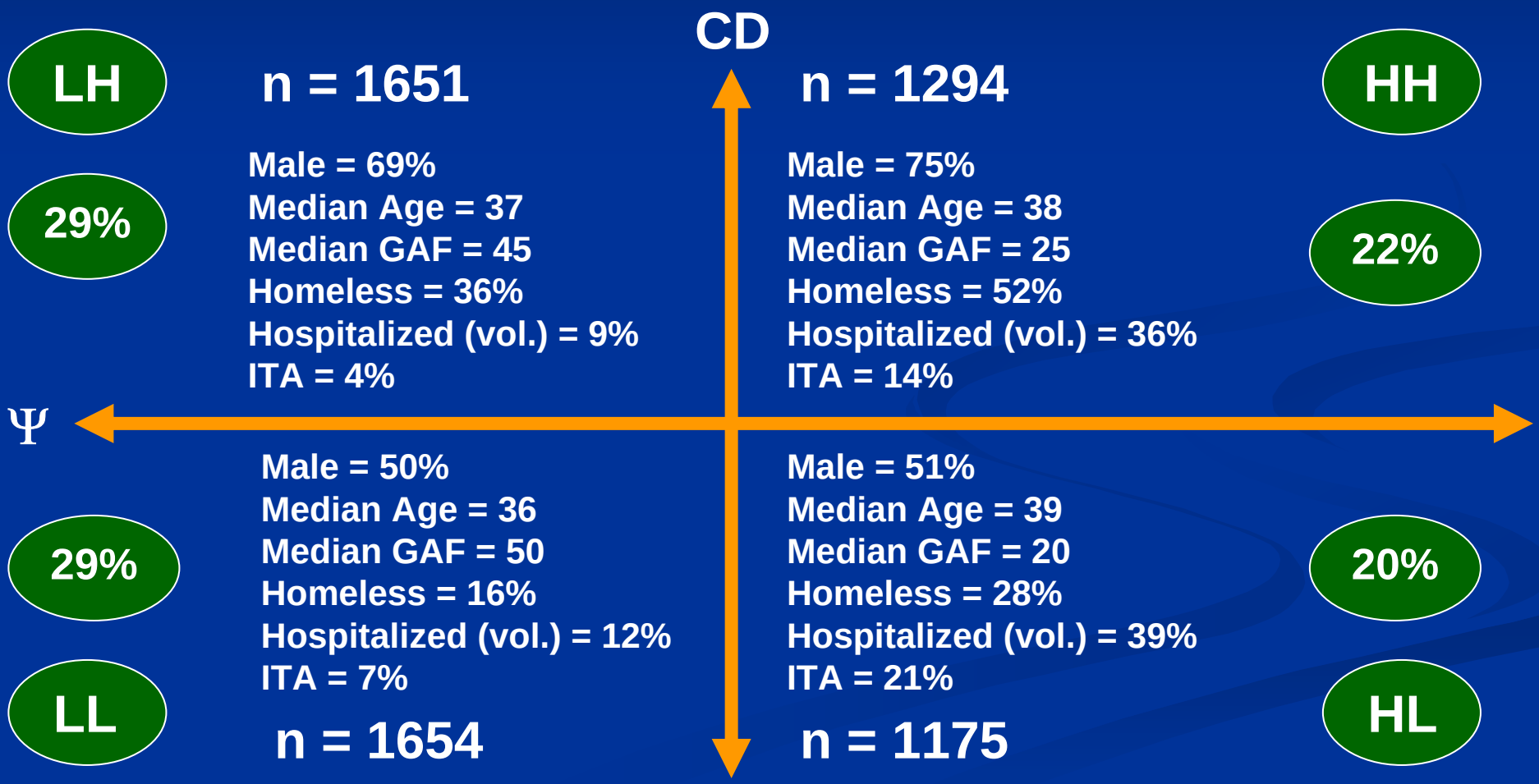

Conclusions re the Co-occurring Matrix:

- Confusion about whether this is only a conceptual model vs whether it can or should be operationalized
  - As a systems of care model or tool
  - As a patient classification model or tool
- Problems with Acute vs Longer term classification of Services need or Pt type
- Problems with Substance induced psychiatric disorders
- Problems with Benchmarked vs Relative definitions of Low/High Severities

Why Operationalize LH categories ?

- Clinicians and agencies could match pt to treatment
- Pt change in status with Treatment
- Categorizing agencies by pt type
- Comparing across agencies, programs, counties, states etc

If one were going to "Operationalze" ….what would be some ground rules?

- Ability to categorize Low vs High severities
- Easy, short, not requiring New data or scales
- Use of elements often gathered in clinical intervews
- Based on concepts or methods already validated
- Use of data elements already in many systems, so post hoc analyses possible
- Others?

Harborview Study

Methods: Attendings rate illness severities across 30 items on all admits and discharges, as part of standard clinical note

- Substance rating=
  - 0 = no substance use problems
  - 1,2 = substance use has led to only minor/infreq problems such as moodiness etc
  - 3,4 = qualifies for Substance Abuse with problems, but not dependence
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GLOBAL ASSESSMENT OF FUNCTIONING (GAF) SCALE

Consider psychological, social, and occupational functioning on a hypothetical continuum of mental health-illness. Do not include impairment in functioning due to physical (or environmental) limitations.

CODE **(Note: Use intermediate codes when appropriate, e.g., 45, 68, 72.)**

100 | 91 — **Superior functioning in a wide range of activities, life's problems never seem to get out of hand, is sought out by others because of his or her many positive qualities. No symptoms.**

90 | 81 — **Absent or minimal symptoms** (e.g., mild anxiety before an exam), **good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, no more than everyday problems or concerns** (e.g., an occasional argument with family members.

80 | 71 — **If symptoms are present, they are transient and expectable reactions to psychosocial stressors** (e.g., difficulty concentrating after family argument); **no more than slight impairment in social, occupational, or school functioning** (e.g., temporarily falling behind in schoolwork).

GLOBAL ASSESSMENT OF FUNCTIONING (GAF) SCALE

70
|
61

Some mild symptoms (e.g., depressed mood and mild insomnia) **OR some difficulty in social, occupational, or school functioning** (e.g., occasional truancy, or theft within the household), **but generally functioning pretty well, has some meaningful interpersonal relationships**.

60
|
51

Moderate symptoms (e.g., flat affect and circumstantial speech, occasional panic attacks) **OR moderate difficulty in social, occupational, or school functioning** (e.g., few friends, conflicts with peers or co-workers).

50
|
41

Serious symptoms (e.g., suicidal ideations, severe obsessional rituals, frequent shoplifting) **OR any serious impairment in social, occupational, or school functioning** (e.g., no friends, unable to keep a job).

40
|
31

Some impairment in reality testing or communication (e.g., speech is at times illogical, obscure, or irrelevant) **OR major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood** (e.g., depressed man avoids friends, neglects family, and is unable to work; child frequently beats up younger children, is defiant at home, and is failing at school).

30
|
21

Behavior is considerably influenced by delusions or hallucinations OR serious impairment in communication or judgment (e.g., sometimes incoherent, acts grossly inappropriately, suicidal preoccupation) **OR inability to function in almost all areas** (e.g., stays in bed all day; no job, home, or friends).

GLOBAL ASSESSMENT OF FUNCTIONING (GAF) SCALE

20 | 11 **Some danger of hurting self or others** (e.g., suicide attempts without clear expectation of death; frequently violent; manic excitement) **OR occasionally fails to maintain minimal personal hygiene** (e.g., smears feces) **OR gross impairment in communication** (e.g., largely incoherent or mute).

10 | 1 **Persistent danger of severely hurting self or others** (e.g., recurrent violence) **OR persistent inability to maintain minimal personal hygiene OR serious suicidal act with clear expectation of death.**

0 Inadequate information.

How Accurate is the GAF ?

- Accuracy depends on
  - Who….degree, training on use of GAF
  - Why….are “contingencies” such as payment for a lower score
  - When…..Acute vs average vs drug induced etc

- Split above or below 50 is ***likely*** to be fairly accurate vs more specific #’s

The "K6"….Kessler 2003

- In last month how often were you:
  - 1 2 3 4 5
  - none little some most all of time
  - Nervous
  - Hopeless
  - Restless
  - Depressed
  - Everything is an Effort
  - Feeling worthless

Score > 13 = correlates with top 10%
in Mental severity

Proposed model:

- Low MI = GAF> 50
- High Addict = Dependence

- High MI= GAF< 50
- High Addict= Dependence

- Low MI = GAF > 50
- Low Addict = No Dep

- High MI= GAF < 50
- Low Addict = No Dep

Study…CSAT funded*

- Based in urban ER
- Rated with Co-occurring Matrix Assessment Tool (CMaST) at ER visit, other detailed data also gathered
- 3 month follow-up for both CMaST, other data for validation, and services received

- * thanks to Wesley Clark, Jane Taylor, and Jim Herrel

Thank you….

- Questions?
- Suggestions?
- Observations?
- Concerns?

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Or is Suicide Addictions Territory?

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- 40-60% of completed suicides across USA/Europe are alcohol/drug affected (Editorial: Dying for a Drink: Brit Med J. 2001)

- Higher suicide rates (+8%) in 18 vs. 21yo legal drinking age states for those ages (Birckmayer J: Am J Pub Health 1999)

What Predicted Suicide Attempts in Alcoholics (n=1,237) over 5 years?

- Rate = 4.5% attempted suicide
- Prior attempts
- Earlier onset and more severe dependence. Other drug dependence
- Separated or divorced
- More likely to have had treatment (more severe)
- More Panic
- More Substance Induced Psych Disorder

Preuss/Schuckit et al Am J Psych03

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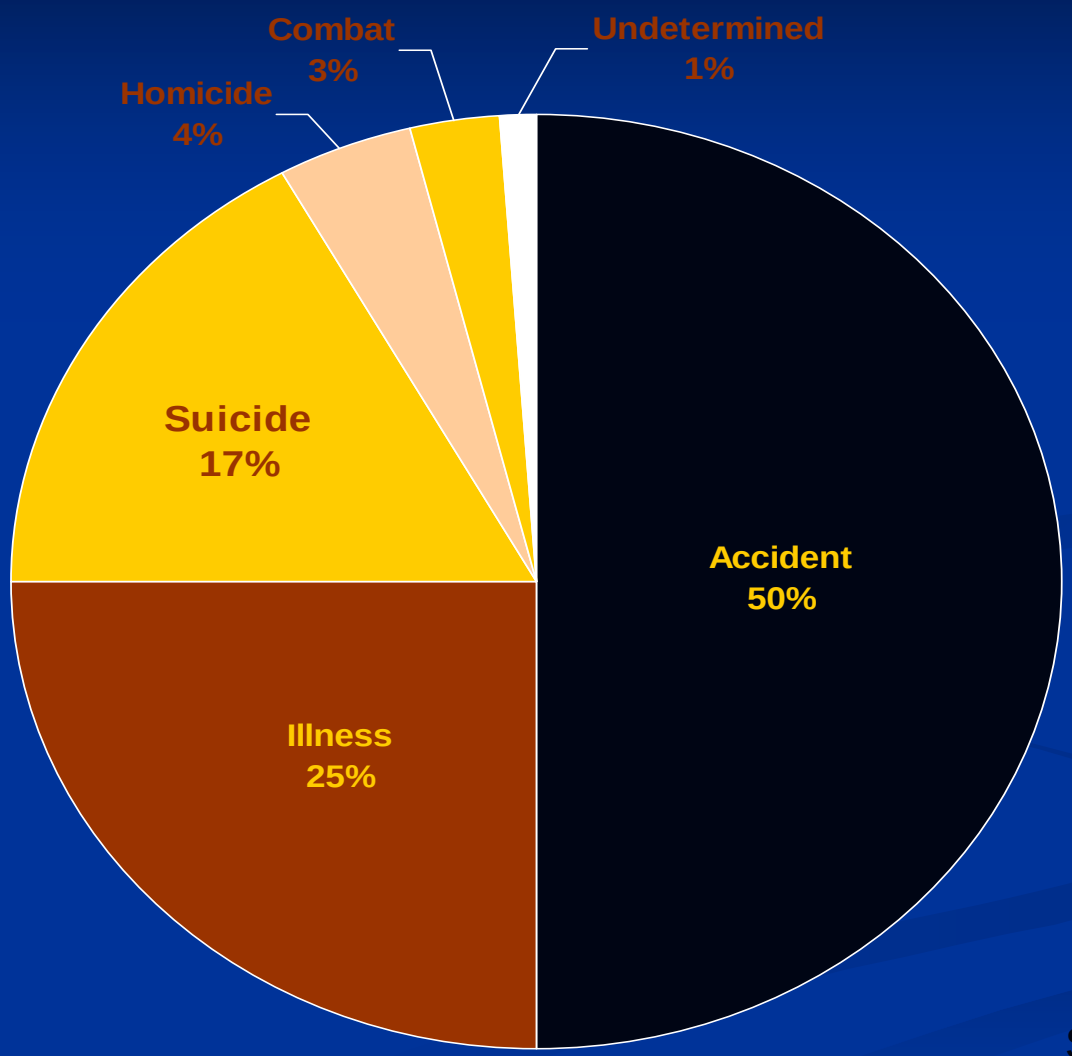

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